

HDP CVD Process For Void-Free Gap Fill OF A High Aspect Ratio Trench

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ABSTRACT OF THE DISCLOSURE

High aspect ratio gaps on a substrate are filled using high density plasma chemical vapor deposition with a minimized ratio of an oxygen-containing component to a silicon-containing component or a minimized flow rate of the oxygen-containing component. Such minimization allows for reduced redeposition rates and reduced etch-to-deposition ratios, thereby increasing gap-fill capability. Consequently, gaps with aspect ratios of 4.0:1 and higher can be filled without the formation of voids associated with conventional methods.